

REMARKS

Examination of the above-identified application in view of the present amendment is respectfully requested.

The Office Action requests that the patentability of claims 1, 2, 10, 11, 12, and 20 be demonstrated in light of the teachings of U.S. Patent 5,790,754 to Mozer et al. (hereinafter, the Mozer patent). The Office Action further requests that the patentability of claims 1, 2, 5, 7, 10, 11, 12, 15, 17, and 20 be demonstrated in light of the combined teachings of the Mozer patent and U.S. Patent 5,835,633 to Fujisaki, et al, (hereinafter, the Fujisaki patent).

The Examiner's indication that claims 3, 4, 6, 8, 9, 13, 14, 16, 18, and 19 would be allowable if rewritten in independent form is noted with appreciation. Claim 3 has been cancelled, and claim 21, which incorporates all of the elements of claims 1 and 3, has been added. New claims 22 and 23 depend from claim 21, so it is respectfully submitted that claims 21 - 23 are allowable in their present form.

The Mozer Patent

Claim 1 recites a method of classifying an input pattern into an associated class. Data is extracted pertaining to preselected features present within the input pattern. A first classification technique is used to determine a discriminant value for each of a plurality of classes reflecting the relative likelihood that a class is the associated class. A class with the highest relative likelihood is selected. A second classification technique is used to generate a confidence value reflective of the a

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posteriori probability that the selected class is the associated class. The selected class is rejected if the determined confidence value is below a predetermined threshold value. It is respectfully submitted that the Mozer patent does not teach the use of a second classification technique to generate a confidence value for a class selected via a first classification technique as recited in claim 1.

Mozer provides a speech recognition system that is optimized for use in small consumer electronics. The basic structure of the Mozer system is a single classifier that calculates an associated confidence value for each of a plurality of classes and selects an output class. Mozer teaches several additional methods for improving the accuracy of the classification process. The Office Action cites one of these, the use of a rejection threshold in interpreting the results of a neural network classifier, as providing the second classifier technique recited in claim 1. The Applicants respectfully disagree.

The interpretation process described in the cited text refers to interpreting probability values provided by a neural network classifier. There are no additional probability values determined through this process, but rather the probability values generated at the neural network classifier are used to select an output class or reject the provided voice sample. In terms of claim 1, the neural network would represent the first classification technique, and the probability values would represent the discriminant values recited in the claim. The two options given for this

interpretation are merely selecting the class associated with the highest discriminant value or selecting the class with the highest value if it exceeds a threshold value. There is no use of a second classification technique to generate a new confidence value for the threshold comparison. Accordingly, it is respectfully submitted that the cited portion of Mozer does not anticipate claim 1.

Referring to FIG. 7, Mozer also teaches classifying a given pattern at a plurality of classifiers and accepting the solution only where a predetermined number of the plurality of classifiers agree. In this arrangement, the rejection of a given classification is not based on a determined confidence value as required by claim 1. Further, in the system illustrated in FIG. 7 of Mozer, the output of all of the classifiers is arbitrated to determine an output class. The described system uses a voting arbitration scheme, where a class selected by a threshold number of classifiers is accepted. In other words, all of the classifiers take part in the selection and thresholding of a given pattern. In contrast, claim 1 recites a method in which an output class is selected by a first classification technique, and the confidence value used for comparison to a rejection threshold is determined at a second classification technique. There is no arbitration of the outputs of the two classification techniques nor any overlap in their function. Accordingly, it is respectfully submitted that claim 1 defines patentable invention over the Mozer patent.

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Claim 11 contains substantially the same elements as claim 1, presented as a computer program product. Claims 2, 10, 12, and 20 each depend either directly or indirectly from one of claims 1 and 10. Each of these claims is patentable for the reasons discussed under claim 1, as well as for its unique elements. Accordingly, it is respectfully requested that the rejection of claims 1, 2, 10 - 12, and 20 under 35 U.S.C. §102(b) be withdrawn.

The Fujisaki Patent

The deficiencies of the Mozer patent are not remedied by the Fujisaki patent. Specifically, Fujisaki teaches multi-stage classification, where a pre-classifier is used, along with external information, to sort each input patterns into one or more of a plurality of broad categories. Each of these broad categories is represented by a specialized classifier that classifies the input pattern into one of a plurality of output classes associated with the category.

As noted in the Office Action, the specialized classifiers do not utilize the same output classes as the pre-classifier. The pre-classifier calculates probability values associated with the broad categories to select one or more of the broad categories, and the specialized classifiers calculate probability values associated with their respective output classes to select one of their associated output classes. Accordingly, while there are a plurality of classifiers in the Fujisaki system, Fujisaki does not teach or suggest using a second classification technique to compute a confidence value for a class selected at a first classifier,

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as recited in claim 1. It is thus respectfully submitted that Fujisaki and Mozer, taken alone or in combination, fail to teach the elements of claim 1.

Claim 11 contains substantially the same elements as claim 1, presented as a computer program product. Claims 2, 5, 7, 10, 12, 15, 17, and 20 each depend either directly or indirectly from one of claims 1 and 10. Each of these claims is patentable for the reasons discussed under claim 1, as well as for its unique elements. Accordingly, it is respectfully requested that the rejection of claims 1, 2, 5, 7, 10 - 12, 15, 17, and 20 under 35 U.S.C. §103(a) be withdrawn.

In light of the above, it is respectfully submitted that claims 1, 2, and 4 - 23 are in condition for allowance. Allowance of the subject application is respectfully requested.

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Respectfully submitted,



Robert B. Sundheim

Reg. No. 20,127

TAROLLI, SUNDHEIM, COVELL,
& TUMMINO L.L.P.
526 Superior Avenue, Suite 1111
Cleveland, Ohio 44114-1400
Phone: (216) 621-2234
Fax: (216) 621-4072
Customer No.: 26,294

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